FES 10-40

Final Environmental Impact Statement and Proposed California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project

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Executive Summary

Introduction

The following sections summarize the Final Environmental Impact Statement (FEIS for Chevron Energy Solutions (CES) Lucerne Valley Solar Project. This information is provided as a convenient synopsis for the public but is not a substitute for review of the complete FEIS. This summary provides a general overview of the proposed Lucerne Valley Solar Project and the BLM's purpose and need; briefly describes the alternatives; and summarizes major impacts for key resources associated with the alternatives.

Chevron Energy Solutions (CES), the Applicant, is proposing to develop a 45-megawatt (MW) solar photovoltaic (PV) plant and associated facilities on 516 acres of federal land managed by the Bureau of Land Management (BLM). The site of CES's Proposed Action is located on unincorporated land in the Mojave Desert, approximately eight miles east of Lucerne Valley. Also included in the proposal is an interconnection to an existing Southern California Edison (SCE) 33-kilovolt (kV) distribution line located north of the site. The proposed project includes relocating a portion of a BLM open route, Zircon Road. The existing part of the route that meanders through the project site would be designated closed and the newly created segment of the route would be designated open. The newly created route would straighten out the road. Travel and access on the proposed relocated Zircon Road would allow residents and recreational users to reach all existing designations. In addition, CES's proposal includes an amendment to the California Desert Conservation Area (CDCA) Plan that would designate the proposed site as suitable for solar energy generation.

Purpose and Need

This chapter describes the purpose and need, discusses the relevant laws, plans, policies, and programs, and briefly describes the issues raised during scoping that will be addressed in the Final Environmental Impact Statement (FEIS).

BLM's Purpose and Need

The BLM's purpose and need for the Lucerne Valley Solar Project EIS is to respond to CES's application under Title V of the Federal Land Policy and Management Act (FLPMA, 43 USC, 1761) for a ROW grant to construct, operate, and decommission a solar generation facility and associated infrastructure in compliance with FLPMA, BLM ROW regulations, 43 CFR, Part 2800, and other applicable federal laws.

The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to CES for the proposed solar project. The decision the BLM will make is whether or not to grant a ROW and if so, under what terms and conditions, and whether to amend the CDCA land use plan. The EIS will be used to consider whether the CDCA Plan should be amended to designate the lands as suitable or unsuitable for solar energy development.

The BLM's review of CES's application is also consistent with the following laws and directives pertaining to renewable energy resources:

- Sec. 211 of Energy Policy Act of 2005, enacted in August, 2005, which mandated up to 10,000 MW of non-hydropower renewable energy projects on the public lands by 2015.
- Instruction Memorandum 2007-097, dated April 4, 2007, Solar Energy Development Policy establishes BLM policy to ensure the timely and efficient processing of energy ROWs for solar power on the public lands.
- Secretarial Order 3283 Enhancing Renewable Energy Development on the Public Lands, signed January 16, 2009. This order facilitates the Department of the Interior's efforts to achieve the goals established in Sec. 211 of the Energy Policy Act of 2005.
- Secretarial Order 3285A1 Renewable Energy Development by the Department of the Interior, signed March 11, 2009. The order establishes the development of renewable energy as a priority for the Department of the Interior and establishes a Departmental Task Force on Energy and Climate Change.

The EIS will also be used to consider the Applicant's proposal to reroute a portion of Zircon Road, a currently designated route of travel. Any reroute of Zircon Road would be evaluated in light of the CDCA Plan and BLM's Off-Highway Regulations, 43 C.F.R. Part 3840.

Public Involvement

The Notice of Intent for the Lucerne Valley Solar Project EIS was published in the Federal Register on July 23, 2009, initiating a 30-day scoping period. The BLM also held two public scoping meetings near the location of the Proposed Action, as follows:

- Lucerne Valley, California, on July 29, 2009, and
- San Bernardino, California, on July 30, 2009.

The issues evaluated in this EIS are derived from internal meetings, comments from other agencies, and public comments made during the scoping period and summarized in the CES Lucerne Valley Solar Project EIS Scoping Summary Report issued in October 2009 (see Appendix A). The Scoping Summary Report is also posted on the BLM Barstow Field Office Web site at http://www.blm.gov/ca/st/en/fo/barstow.html. Comments for the following resource areas were received during scoping from agencies, organizations, and the public and became the basis for defining issues:

- Air Quality (Including Climate Change)
- Geologic Resources
- Soils
- Hydrology, Water Quality, and Water Resources
- Biological Resources
- Cultural Resources
- Land Use
- Recreational Resources
- Aesthetic/Visual Resources
- Traffic and Transportation
- Hazardous Wastes
- Social and Economic Considerations
- Environmental Justice

Summary Description of the Proposed Action and Alternatives

As defined by the purpose and need, the BLM is responding to CES's application for a right of way on federal lands administered by the BLM for solar energy production. In doing so, the BLM will adopt one of the alternatives listed below.

Alternatives considered in the FEIS are based on issues identified by the BLM and on comments received during the public scoping process. The BLM is required to consider in detail a range of alternatives that are considered "reasonable," usually defined as alternatives that are realistic (not speculative), technologically and economically feasible, and responsive to the purpose and need of the project.

This document provides information to the authorized officer to make the following decisions:

- Should the application area remain undesignated or be designated as suitable or unsuitable for solar energy development?

  If the BLM designates the area as suitable for solar energy development, it would decide:

  - Should the proposed ROW grant be issued as applied for; issued for a modified project, or denied?

- Should the designated route of travel, Zircon Road, be rerouted?

  If the BLM decides to reroute Zircon Road, it would decide:

  - Should the existing segment of Zircon Road that passes through the project site be designated as closed? Should the newly created segment of Zircon Road be designated as open?

Alternative 1: No Action / No Plan Amendment

The No Action Alternative assumes that the ROW application is denied, that the Lucerne Valley Solar Plant and associated facilities, would not be constructed and operated, Zircon Road would not be rerouted, and that the CDCA Plan would not be amended. The adoption of Alternative 1 would leave current management practices intact and would be in conformance with the CDCA Plan.

Alternative 2: Land Use Plan Amendment

Alternative 2 would deny the ROW application, but the CDCA Plan would be amended to classify the project site as either suitable or unsuitable for large-scale solar development. The area within the project site would then be managed in accordance with the plan amendment.

Alternative 3: CES's Proposed Action

The Applicant has applied for a BLM ROW authorization to construct, operate, maintain, and decommission a 45-MW, solar PV power plant and associated facilities. The proposed site is just south of State Route 247, approximately eight miles east of the junction of Barstow Road and Old Woman Springs Road in Lucerne Valley. The total ROW would span 516 acres and consists of land under the jurisdiction of the BLM in San Bernardino County, California.

The proposed project would be built in two phases. Phase I would be a 20–MW facility, with construction beginning in late 2010. It would interconnect to the existing SCE 33-kV distribution

line immediately north of the site and across Foothill Road and could be built without upgrading the existing line. Phase II would be no more than 25 MW and is contingent on available transmission capacity and future power sales. The exact size of Phase II is limited by the available capacity in the distribution line.

The Applicant proposes realigning portion of Zircon Road that passes through the project area. The approximately 0.27 miles of Zircon that would no longer be used as an open route would be designated as closed. This area would be used by the project and would be included in the ROW. The newly constructed section of Zircon Road would be designated open. This relocation of Zircon Road would not change access to any destinations.

The Applicant's Proposed Action would require an amendment to the CDCA Plan that would change the designation of land within the ROW to be suitable for solar energy generation.

Alternative 4: Modified Site Layout

In response to comments received during public scoping, the BLM is analyzing an alternative that reduces impacts on visual resources. This alternative is the same as Alternative 3, with three modifications to reduce environmental impacts:

- Require a 50-foot setback from Santa Fe Fire Road;
- Use natural vegetation as a screen; and
- Design some site drainage to provide a water source for the vegetative screen, if feasible, through the Streambed Alteration Agreement.

To reduce the visual impacts, the minimum distance from the edge of Santa Fe Fire Road where the proposed project perimeter fence could be located (or set back) would be increased to 50 feet. The setback would remain unaltered by project construction, so the existing vegetation would screen the project from nearby residents and, somewhat, from users of Santa Fe Fire Road. Some of the drainage for the graded area would be redirected to flow from the site into the setback, increasing the water available to the setback vegetation.

The project components, project phasing, energy generation, access roads, transmission interconnect, and construction methods would be the same as those previously described for CES's Proposed Action. Alternative 4 also reroutes Zircon Road as described in Alternative 3 above. Alternative 4 would also require amending the CDCA Plan to change the ROW designation to be suitable for solar energy development.

Alternative 5: Smaller Project Alternative

This alternative would reduce the output of the solar power plant from 45 megawatts to 30 megawatts. It would also reduce the size of the developed area to 238 acres. This project would develop the area west of Santa Fe Fire Road, similar to the western portion of Phase I under Alternative 3 and the area east of Santa Fe Fire Road but north of the relocated Zircon Road. Under this alternative, the area south of the relocated Zircon Road would not be developed, so 120 acres would be developed east of Santa Fe Fire Road.

Other features of this alternative are the same as Alternative 3, including the reroute of Zircon Road. This alternative, as with Alternatives 3 and 4, would require amending the CDCA Plan to change the ROW designation to be suitable for solar energy development.

Environmental Impacts and Mitigation Measures

Proposed Action and Alternatives

This document analyzes the environmental issues associated with the construction operation, maintenance, and decommissioning of the Proposed Action and alternatives and the required CDCA Plan amendment. Impacts were analyzed by resource area based on information provided by the Applicant in the initial application and in response to subsequent data requests, field investigations and surveys, public scoping, literature research, and input from federal, state, and local agencies. The environmental effects of constructing, operating, maintaining, and decommissioning the solar facility as proposed in Alternative 3 are summarized below by resource area.

A summary comparison of effects of the alternatives is provided in Table ES-1.

Air Quality

Construction of Phases I and II components would generate air pollutant emissions, such as equipment and vehicle exhaust and fugitive dust. These emissions would include criteria pollutants (VOCs, NO_x, CO, SO_2, PM_{10}, and PM $_{2.5}$) and hazardous air pollutants, such as diesel particulate matter (PM). The estimated maximum daily emissions of PM_{10} during the construction of both phases are predicted to exceed corresponding Mojave Desert Air Quality Management District daily impact thresholds of 82 pounds per day, with a value of 176 pounds per day for Phase I and 86 pounds per day for Phase II. Total annual emissions of PM_{10} would be above the California Clean Air Act threshold of 15 tons per year with a value of 16.82 tons per year.

This disturbance in the existing air quality would be short term (240 days per phase, or 480 days for both phases). It is expected that potential emission sources resulting from operations and maintenance activities would be mainly related to vehicle traffic on roads, including all-terrain vehicles and water trucks for panel washing. Estimations of operational emissions show that the expected exhaust and fugitive dust emissions would not exceed the thresholds established by the Mojave Desert Air Quality Management District or the federal action applicability criteria for general conformity.

During reclamation, all equipment, buildings, concrete foundations, and driven piles would be removed from the site. This analysis assumes that emissions would be in a magnitude similar to those estimated for construction for Phase I (worst-case scenario from construction). This would result in short-term effects on the projected background conditions of the area, especially in levels of PM.

Greenhouse gas (GHG) emissions would be generated during construction, routine operational activities, maintenance, and decommissioning. CO_2 and CH_4 would be emitted from on-road vehicles and non-road equipment during construction and from vehicles used during routine operational activities. A comparison of the GHG emissions (88.3 million metric tons of carbon dioxide equivalents [$MTCO_2e$]) to the existing power plant inventory for California (107,243,302 $MTCO_2e$) shows that the emissions resulting from the Proposed Action would be 0.00008 percent. Since the Applicant's Proposed Action is intended to generate electricity from a renewable source of energy, no increase of consumption of fossil fuels and related combustion emissions are expected. A typical 45-MW fossil fuel fired power plant in California would produce 1,448,330 $MTCO_2e$ over its 30-year lifespan. Subtracting the Applicant's Proposed Action GHG emissions (88.3 $MTCO_2e$) from these avoided emissions also indicates that the

Applicant's Proposed Action would assist in the attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. Only 433 acres of the site (516 acres) would be developed, and of this, only 12.5 acres would be graded. The vegetation on the remaining 420.5 acres would be grubbed (cleared of roots and stumps) and scarified (the soil would be broken up). This would result in a loss of 317.5 tons of carbon storage capacity.

Noise

Individual pieces of equipment would generate noise levels in a range from 74 to 89 dBA at 50 feet from the source (Table 4.2-1). The worst case result of composite construction noise is derived by adding the individual equipment noise levels logarithmically, which would result in a maximum level of 97 dBA. In addition, a temporary increase in traffic noise on SR 247 and local roads would occur.

It is estimated that construction activities would produce a short-term, adverse increase over the existing ambient noise levels at the site boundary of the project area (50 feet from the source). In addition, the use of percussive or vibratory equipment during the installation of the solar arrays may produce a short-term groundborne vibration (above 75 VdB) and groundborne noise levels. Due to the location of the closest residence (located less than 0.1 mile from the site), these noise and vibration levels would not be attenuated over distance and reduced to background levels at the closest sensitive receptor (located less than 0.1 mile from the site). Because construction of Phase II would begin in the north and move to the south, disturbance from Phase II construction would result in a short-term, adverse effect on the residence. Implementation of MM NOI-1 would mitigate construction noise impacts during Phase I and Phase II construction.

Other sensitive land uses, such as recreation and special management areas may be affected by a short-term increase of noise levels. Effects on recreational users may be detectable along Santa Fe Fire Road but would be short-term and unlikely to impair the recreational resource.

The relative loudness of transformers depends on the construction design and techniques, as well as the ambient noise levels at a site. During construction, the Phase I equipment would include a total of 10 transformers (one for every two megawatts of power generation) to be enclosed within each photovoltaic power block. The composite noise level from identical sources—which can be predicted based on the final design, location, and technical specifications—would add three dB per identical transformer. However, the closest transformer to the closest receptor is over 500 feet away. Even with the composite noise of multiple transformers (10 in Phase I and 13 in Phase II), the sound level at the closest receptor would not exceed 55 dB. While this would result in a long-term increase in ambient noise levels, it would not be audible to the nearest receptor.

Geology, Topography, and Geologic Hazards

Although the site is located on an alluvial fan whose sediments have the potential for movement during large precipitation events, the project area would be constructed to minimize that potential movement by utilizing the natural on-site drainage. In addition, all excavations associated with the action alternatives would be filled with soil or a post or foundation. It would not create subterranean void spaces. Therefore, all alternatives would not increase the geologic instability of the area and would not increase the risk of on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. There would be no effect on a unique geologic feature.

There is the potential for damage to project components due to fault rupture, earthquakes, or seismic shaking. However, all project structures would have to comply with applicable earthquake building codes; therefore, earthquake-related damage to structural components of the project area would be minimized and would be confined to the site. However, workers and wildlife potentially could be exposed to earthquake damage at the facility. Flash flood events could result in on-site damage that could represent a hazard to on-site workers or wildlife. It is possible that a major flash flood could result in damage down gradient of the site. Compliance with earthquake building codes and maintaining the natural drainage would minimize potential risk associated with the most likely geologic hazards in the area; however, once these events occur, they can strain or stress the existing infrastructure.

Soils

The site of the project area is ranked in Wind Erodibility Group 2, indicating that the soils are very highly erodible. Approximately 12.5 acres would be graded or developed, broken down as follows: 0.0003 acres for the switchyard, 0.006 acres for the operation and maintenance building, 7 acres for the access road, 5 acres for the power line, and 0.5 acres for the parking/laydown area. Another 420 acres would be grubbed or scarified for solar panel installation. No soil would be removed or brought onto the site.
Both topsoil and vegetation would be removed and vegetation would not be allowed to re-grow over an approximate 12.5 acre area. Therefore, there would a strong potential for wind and water erosion over this 12.5 acres. To reduce the potential effects from erosion and topsoil removal, the Applicant would implement their stormwater pollution prevention plan (SWPPP) during construction.

The solar arrays would be installed on the natural ground surface, following the topography of the area; however, this area would not be grubbed or scarified, which would increase its erodibility because desert vegetation has extensive root systems. Removing these root systems would decrease the soil stability in the area. The solar arrays would protect the underlying soil from wind erosion and would reduce the energy of precipitation before it hits the ground surface so the potential for erosion would decrease in some areas. However, precipitation would flow off of the panels and would be concentrated at the lower ends of the panels, so this may create gullies at these locations. Erosion could occur as a result of construction and operation of the Proposed Action, which could have both short-term and long-term adverse effects. Grubbing and scarifying the solar panel area would alter the erosion potential. Although erosion could occur, based on the design of the project, the Applicant would implement a stormwater pollution prevention plan (SWPPP) to minimize erosion and decrease the potential for siltation in water bodies. The Applicant also would implement fugitive dust control measures. Therefore, none of the alternatives would contribute to substantial soil erosion or loss of topsoil in the area during construction.

Due to the lack of protected soils at the site, development of the project area would not affect soils identified for special protection.

Water Resources

The Applicant is conducting flooding models using the Hydrologic Engineering Centers River Analysis System [HEC-RAS] of the United States Army Corps of Engineers; however, the data were not available at the time of publication of this document. Previous modeling by the Applicant has indicated the major drainage channels could experience high flows during episodic rain events. The available information suggests that flooding is possible in the project area, but the intensity and frequency of these events is not known. Therefore, it is not possible

at this time to estimate what the potential flood risk is at the site and the possible effects. This information would be required to engineer the final design of the solar arrays. The additional modeling will be discussed in the Record of Decision.

Of the 516-acre site, only 433 acres would be developed. Of this area, approximately 12.5 acres would be graded for construction of the switchyard, operation and maintenance building, the parking/laydown area, the access road, and power line corridor. Vegetation would be removed and would not be allowed to re-grow on the parking lot, switchyard, operations and maintenance building, and access road. Except where structures were installed, these areas would be graded, compacted, and covered with gravel. The solar arrays would cover 420 acres of the 516-acre ROW and would be installed on the natural terrain; however, this area would be grubbed and scarified.

Under this alternative, most construction would occur on natural terrain without altering the natural drainage or flow patterns; approximately 12.5 acres would be graded. A cut and fill method would be used, but no soil would be removed and brought onto the site. The presence of structures and a concrete pad and the grading of the areas for these structures would alter drainage and flow patterns locally and potentially in areas downstream.

Grubbing and scarifying would remove vegetation and roots, decreasing the stability of the soil. Of the 420 acres in the solar array field, less than half of the area would be shaded by solar arrays. A string of solar panels would be spaced 10 feet apart and would cover an approximate 9-foot by 51-foot area with a minimum of a foot between the arrays. Approximately 4,500 solar panel strings would be installed. Although the solar panel strings would be impermeable, precipitation would flow off them onto the natural terrain. The area underneath and surrounding the solar panel strings would remain permeable, so the solar panel strings would divert precipitation but would not prevent its infiltration. Flow off would be concentrated at the panels' edges and could create small troughs at the base of each panel. The Applicant would conduct regular maintenance to prevent gullies or troughs from developing.

The primary drainage channels within the site would be left intact, and sheet flow would occur throughout the site; however, depending on the extent of surface alteration of the topography and the changes in soil erosion/stability, flow patterns could be altered in solar array areas, which could alter the overall flow pattern for the Proposed Action site.

Groundwater quality would not be altered by the any alternative.

During construction and decommissioning activities, increased erosion could result in a decrease in surface water quality by increasing turbidity (i.e., the clay and silt load in surface water). The Applicant would use siltation prevention measures during construction as well as implement their SWPPP and their Spill Prevention and Response Plan. The alternatives would not degrade the quality of surface waters by increasing erosion, increasing sedimentation, or introducing contaminated waters if the SWPPP and Spill Prevention and Response Plan are properly implemented.

During construction water would be used for dust control and soil compaction. The water use for construction of the first 20-MW phase is estimated at approximately 1.75 million gallons (5.4 acre-feet). The second 25-MW phase is estimated to require approximately 1.25 million gallons of water (4.6 acre-feet). During operation and maintenance, water would be used primarily for panel washing. Although the actual water requirements for operations and maintenance are not known, the estimated amount of water required would be between 10,050 and 20,100 gallons

for Phase I and 12,570 and 25,140 gallons for Phase II. This would correspond to 22,520 to 45,240 gallons per year once the entire 45-MW field is built (Fotowatio Ventures 2010). Water for panel washing would be provided through a contract with one of the local large industrial companies or municipal water companies that have high capacity wells and water systems. No new water sources would need to be developed.

Biologic Resources

Vegetation

Direct effects on yucca plants (e.g., Joshua trees) during construction would be short-term. The Applicant would work with San Bernardino County to develop a salvage plan that would promote the long-term survival of healthy Joshua trees and all cacti, except cholla species, to be removed as part of the project. While every effort would be taken to salvage these plants, it is recognized that cacti are difficult to successfully transplant and a large percentage are expected to be lost during salvage efforts. Plants which would directly be impacted by construction activities would be flagged for salvage and removed. In addition, no long-term adverse indirect effects on the remaining yucca plants (e.g., due to noise, vibration, dust) are anticipated because construction would be short-term and dust control measures will be in place during the operation of the facility.

Overall, the adverse effects under Alternative 3 could include direct mortality, loss of plant habitat, plant injury, alteration of plant community structure, and community fragmentation, and dust during construction could indirectly decrease plant photosynthesis. These effects would be both short- and long-term in nature and predominantly limited to the site of the Proposed Action, with the exception of edge effects at the perimeter of the site.

Wildlife

Vegetation grubbing/scarifying and grading associated with construction would directly affect wildlife by removal and crushing of shrubs and herbaceous vegetation, resulting in loss and fragmentation of cover, breeding, and foraging habitat. Furthermore, these activities and vehicle use could cause direct mortality to wildlife; slower-moving wildlife, such as small mammals, ground nesting birds, and especially reptiles, have a higher risk of mortality. Reptiles use their environment to thermoregulate. Because they do not shelter from heat and cold and are thus relatively exposed, they may not be able to avoid grading and construction activities.

Noise, vibration, and human activity would likely cause most wildlife species to avoid the Proposed Action area until the disturbance conditions have concluded. The presence of humans, construction equipment, and dust would cause wildlife to alter foraging and breeding behavior and could cause wildlife to avoid suitable habitat.
Loss and degradation of habitat would cause wildlife to rely more heavily on habitat in surrounding areas. Competition could cause wildlife to forage for longer periods and/or to have lower overall nutrition. Loss of burrows due to construction, ground vibration, or avoidance behavior would also cause wildlife to search for or dig new burrows. Infrastructure built as part of the Proposed Action would alter wildlife movement in the area and just outside the boundary of the Proposed Action (especially for ground-dwelling mammals and reptiles). Fences and transmission poles could also cause increased predation of reptiles, small mammals, and small birds around the Proposed Action site because raptors would use the infrastructure for perches.

Special Status Species

Grubbing/scarifying and grading would directly remove special status plants from the area, would cause temporary and permanent soil disturbance that would impede future use by special status plants, and would remove the seed banks from the area for those species. The Proposed Action would also directly remove approximately 433 acres of creosote bush-white bursage, white bursage, and/or desert wash communities that are associated with special status plants. Dust generation from construction activities could cause the indirect loss of plants by covering the leaves and thereby impairing photosynthetic activity.

Clearing and grading activities, construction, and vehicle use during construction and operation and maintenance are all sources of direct mortality to wildlife species. Collisions with equipment and vehicles can occur for slower-moving species, species that have subsurface burrows, or ground-nesting birds. Some species are very susceptible to visual and noise disturbances caused by the presence of humans, construction equipment, and generated dust. Nesting birds may abandon nests due to these disturbances, and bats are also susceptible. Grading and grubbing activities could indirectly affect special status wildlife through habitat loss such as the removal and/or modification of 433 acres of creosote bush-white bursage, white bursage, and desert wash communities. These vegetation communities provide forage, shelter, and nesting opportunities for many special status wildlife. The presence of infrastructure may indirectly cause mortality to wildlife by increasing the risk of predation on certain species by native predators, such as ravens, and introduced predators, such as feral dogs and cats. Effects on special status wildlife would be short- and long-term, and both localized and extensive.

Le Conte's thrasher, northern harrier, and prairie falcon have been observed on the site and may be adversely affected by the Proposed Action. These species use the area for foraging and, in the case of the thrasher, potentially for nesting. These birds would be susceptible to visual and noise disturbance as described above, potentially resulting in alteration of foraging behaviors to avoid the site. This would cause avoidance of suitable habitat and energetic costs to locate other suitable habitat in the area around the Proposed Action. While the harrier and falcon can likely forage elsewhere, the thrasher may be at higher risk from the Proposed Action if the species is using the vegetation on-site to nest. The thrasher nests low to the ground in dense shrubs and cacti species and could lose nests directly due to collisions and clearing and grading activities. The thrasher could also abandon its nests due to disturbance. Removal of vegetation from the site would remove forage habitat for the northern harrier and prairie falcon and nesting and forage habitat for the Le Conte's thrasher, resulting in direct, short- and long-term loss of food and shelter for the birds.

Desert tortoises is present on-site and would be adversely affected by the Proposed Action. Effects would be both short- and long-term. The Proposed Action activities could potentially extend to areas outside the boundary of the Proposed Action. For example, the tortoise could be susceptible to mortality from collisions with vehicles entering and leaving the site and project construction could impact partial home ranges which currently overlap with the project footprint.

The Proposed Action could result in direct or indirect effects on birds protected by the Migratory Bird Treaty Act, including northern harrier, prairie falcon, golden eagle, red-tailed hawk, and any other migratory bird species. If vegetation clearing is conducted during the avian breeding season, active nests could be destroyed. Alteration of foraging behaviors due to on-site disturbances may also cause avoidance of suitable habitat. This would have energetic costs and would indirectly contribute to stress and mortality of these birds. The presence of Proposed Action infrastructure may increase collision mortalities. Alteration of the prey base and loss of prey to increased mortality from construction activities may decrease raptor foraging success.

Again, reduction in prey could indirectly contribute to stress and mortality of these predatory birds.

Cultural Resources

No cultural resources eligible for inclusion in the National Register of Historic Places (NRHP) are known to occur in the project area, in the proposed locations for temporary access roads, or within a one-mile radius of the site perimeter. Construction of the proposed facility would involve ground disturbance, resulting in potentially adverse effects on previously unidentified surface and subsurface cultural resources, including human remains. Evaluations of sites identified during the BLM Class III inventory (Chambers Group 2009) against NRHP criteria concluded there is no evidence of intact deposits of subsurface cultural material.

Paleontological Resources

An action alternative has a low potential to affect significant nonrenewable fossil resources because the Quaternary alluvium it would be located on has low paleontological sensitivity. However, Pleistocene older alluvium and other fossil-bearing rock would have high potential to contain significant vertebrate fossils. Such sediments may be encountered during subsurface construction activities, resulting in accidental damages to paleontological resources.

Lands and Reality

The site is located on land designated MUC M (Moderate Use), which allows energy generating facilities, including solar development; however, the site would extend 1.4 miles into a three-mile-wide CDCA Plan-designated “contingent” utility corridor (Corridor “S”). The Energy Production and Utility Corridor Element of the CDCA Plan currently allows only linear utilities, such as highways, pipelines, transmission lines, communications lines, and natural gas pipelines, to be sited within the corridor without a plan amendment. As a result, a plan amendment to allow large-scale solar generation that may block the construction of such projects may appear to conflict with the goals of the CDCA Plan. The action alternatives, however, have been sited directly west of rugged terrain, which forms a natural barrier to linear utility development. Because the cost of building any infrastructure over this terrain would be significantly more expensive than circumventing it, potential developers would be more likely to site linear infrastructure to the north of the project area. Therefore, the Applicant’s analysis of the corridor concluded that sufficient area would remain in the corridor for reasonably foreseeable future utility projects. The action alternatives would, therefore, have no adverse effect on the BLM’s ability to site future utilities within the corridor and would have negligible conflict with either the Energy Production and Utility Corridor Element or the MUC M designation of the CDCA Plan.

Special Management Areas

There would be negligible effect on Special Management Areas as a result of an action alternative. State Route 247 is a County-designated Scenic Route. Drivers along State Route 247 would have views of the site during construction, operations and maintenance, and reclamation. Impacts on sensitive viewers are evaluated in more detail in Section 4.12.

Recreation

The action alternatives include the realignment of Zircon Road within the site Zircon Road in its present form would remain open until the realignment is completed. Thus, there would be no loss of access.

During construction, portions of Santa Fe Fire Road may be temporarily inaccessible; however, the road would not be completely closed to vehicle traffic during construction. During this time, recreational users attempting to access the San Bernardino National Forest would be able to use Santa Fe Fire Road. The temporary closure of portions of Santa Fe Fire Road during grading and hardening would result in short-term effects on access but long-term beneficial effects on the quality of the road. Closure of Santa Fe Fire Road would not affect any other designated recreational area.

Visual Resources

During the construction period, construction activities and materials, equipment, trucks, and parked vehicles could be visible on the site and thus temporarily change the existing visual environment. Construction activities would be conducted in a manner that would minimize (visible) dust emissions. Therefore, visual changes associated with construction period activities at the site would be short-term.

An action alternative would create a fairly substantial visual contrast, particularly for viewsheds directed toward the backs of the solar panels. Overall impacts are minor based on KOP-specific considerations. According to the BLM interim VRM Class IV management objectives, an action alternative's contribution to visual resources would not be considered significant. The project would be an industrial facility in a lightly populated area, and there would be a noticeable change to the view for residents and visitors. All potentially considered scenic vistas that would have full visibility of the site occur from elevated positions located more than two miles away from where the project contrast would be seen in the foreground-middle ground distance zone, resulting in moderate rather than strong visual contrasts.

The site is not in a designated area of natural beauty or scenic recreational area. However, the County of San Bernardino has designated SR 247 as a scenic route. As mentioned earlier, the State only extends scenic highway eligibility to this roadway. The site is generally unremarkable, with no distinguishing geological features or distinctive vegetation. However, visual resources of the surrounding valley and mountain environment are noticeable with overall views that would be degraded to a degree. The presence of the solar facility would create a moderate contrasting change in the visual quality of the overall landscape.

The solar facility would be visible from an eligible state scenic highway (SR 247) at less than a quarter mile away. Duration of view is short, and the highway is not officially designated by Caltrans but does carry the San Bernardino scenic route status; therefore, an action alternative would not result in a major impact from these views.

An action alternative would not result in a major adverse impact upon nighttime views in the area from introducing a new source of light or glare. In sunlight, for viewers looking directly at the solar panels, at a distance or an elevated position, the solar field at its most reflective state would mirror the sky and could appear like a lake at hours of the day when the panels were oriented toward the viewer (e.g., looking from the south with the sun behind the viewer on a sunny afternoon). It would not produce significant glare. At night, the solar collectors would not be visible from the viewpoints identified.

An action alternative would result in increased levels of visual contrast by introducing new permanent above-ground structures into the landscape. However, these changes would not directly conflict with the management objectives associated with the interim VRM Class established for the site. In summary, visual changes associated with operations and maintenance would be long-term.

Transportation and Traffic

Construction of both phases would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force (assuming they all drive separately) and approximately 20 trips (10 inbound, 10 outbound) due to delivery of construction equipment and supplies to the site. This increase in traffic volume would occur primarily on SR 247, Foothill Road, and Santa Fe Fire Road as these are the predominant roads that would be used to access the site. Zircon Road and Santa Fe Fire Road may experience short-term effects as these roads are improved. Up to a maximum of 110 additional trips per day would not change the LOS of SR 247, nor would it affect the LOS of I 15, SR 18, or Bear Valley Road. During Phase II the labor force would mirror the labor force discussed for Phase I.

During Phase I, a 33-kV transmission line segment would be constructed across Foothill Road, resulting in short-term effects on Foothill Road as traffic may be stopped periodically while the line is constructed. The original Zircon Road would not be closed until the realignment as been completed. The realignment of Zircon Road would result in long-term, beneficial effects on the quality of the road. During Phase I, the Applicant would improve Santa Fe Fire Road. During grading and hardening, portions of Santa Fe Fire Road may be temporarily inaccessible; however, the road would not be completely closed. The residence located adjacent to the site at the intersection of Foothill Road and South Santa Fe Road would have full access to their home during construction.

Human Health and Safety

If a release of hazardous material were to occur, proper implementation of the Spill Prevention and Response Plan and the SWPPP would limit the area that could be contaminated and ensure that any release is cleaned up in a manner that complies with federal, state, and local regulations. It is unlikely that a hazard to the public or environment would occur as a result of soil disturbance at the site during construction, but the public or construction workers could encounter hazardous wastes on the site. Disturbance of groundwater is also not expected to occur during site construction because foundations would not be drilled to these depths. During operation, leaks or spills could occur if the transformers at the substations were damaged from a seismic event, fire, or other unforeseen incident. However, leaks would likely be contained within the walls of the substation and the transformers would have biodegradable oil. The solar facility may increase the potential for additional incidents related to fire and fire safety.

Social and Economic Conditions

Construction during both phases would require only a peak labor workforce of 45 workers. Some workers would be local (i.e., permanent residents of San Bernardino County), but it is expected that some would migrate to the work site from outside of the area. There would be no noticeable short-term population effect and no effect on any public service capacities or level of service standards.

Hotels and motels within the immediate vicinity and within commuting distance to the site would receive the benefit of increased occupancy and related spending from temporary workers; therefore, there would be a short-term beneficial effect. The social well-being of Lucerne Valley Economic Development Association (and its representatives) would be enhanced in some ways because compatible sustainable infrastructure development would be implemented within the Lucerne Valley.

The project footprint would change the historic relationship that these users have with the land but would not necessarily alter it in a detrimental manner. There is a possibility that some positive aspects of social well-being associated with the use and enjoyment of select acreage of wildlife habitat that is taken over by the project footprint could be affected both on a short- and long-term basis.

Project workers and suppliers would experience a positive sense of social well-being as their resources, skills, and goods and services could potentially be mobilized to build, operate, and sustain the solar plant. The utility/wholesale processor would experience a positive sense of social well-being and satisfaction by knowing that they are contributing to California's renewable energy generation portfolio targets for electricity generation and earning profits. It is highly likely that social attitudes run the gamut from being pro-renewable energy development, to being against a change to the desert environment, to being indifferent to the proposed development. Some of the final end use customers could enjoy the social benefit of having a portion of their final demand met from renewable solar resources. The social benefit relates to a sense of satisfaction that a portion of their final demand is derived from emission-free solar power generation assets.

Assuming that $20 million of construction phase direct spending (related to wages and purchases of materials and equipment) occurs in San Bernardino County, the initial $20 million in direct local content expenditures would generate a grand total of $36.1 million in total output to the region. Indirect effects include the effects occurring along the supporting supply chain as goods and services are purchased from vendors and subcontractors supporting the installation. Induced effects represent the cumulative effects from household spending, reflecting labor earnings from direct and indirect related economic activity. On average, 25 construction and supervisory personnel would be required on-site for approximately eight months to build Phase I, with 45 personnel being required at peak times. During Phase II, this manpower loading would be repeated.

An action alternative would be expected to have a short-term beneficial effect on local jurisdiction tax revenues during the construction of Phases I and II. Operations and maintenance of both phases of an action alternative would be expected to have a long-term beneficial effect on San Bernardino County's public revenues.

Environmental Justice

An action alternative is not expected to have a disproportionately high and adverse human health or environmental effect on covered minority and low-income populations in the Lucerne Valley, because these populations do not exist in the project area.

Energy and Minerals

Access to some prospected or production sites for mineral or energy resources could be inhibited during construction; operations and maintenance; or decommissioning of an action alternative; however, due to the lack of known mineral resources at the site, no effect on mineral or energy resources would occur. In addition, an action alternative would require energy and mineral resources for construction, operations and maintenance, and decommissioning.

Conclusion

An action alternative would result in short-term and long-term adverse effects (after mitigation) on biological resources. Unavoidable, short-term effects on visual resources would occur during construction and decommissioning. During operations and maintenance, effects on visual resources would be long-term but minor. In addition, moderate, short-term cumulative effects on air quality (PM_{10} levels) would occur during construction and decommissioning. Beneficial effects may result on social and economic conditions. Table ES-1 contains a summary of impacts by alternative.

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
4.1 Air Quality	No effects	No effects	During construction, total annual emissions of PM10, if both phases occur in the same year, would be above the CCAA threshold of 15 tons per year with a value of 16.82 tons per year. During reclamation there would be potential short-term increase in air pollutant emissions. L During construction, routine operational activities, maintenance, and decommissioning, GHG emissions would be generated. A comparison of the GHG emissions (88.3 MtCO2e) to the existing power plant inventory for California (107,243,302 MtCO2e) shows that the emissions resulting from the Proposed Action would be 0.00008 percent. A typical 45-MW fossil fuel fired power plant in California would produce 1,448,330 metric tons of carbon dioxide equivalents (MtCO2e) over its 30 year lifespan. Subtracting the Proposed Action GHG emissions (88.3 MtCO2e) from these avoided emissions also indicates that the Proposed Action would assist in the attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. This would result in a loss of 317.5 tons of carbon storage capacity.	Effects during Phases I and II under this alternative would be the same as those identified under Alternative 3 since the project is the same size and the same amounts and types of disturbance would occur using the same vehicles for the same length of time.	During construction, total annual emissions of PM10, if both phases occur in the same year, would be above the CCAA threshold of 15 tons per year with a value of 15.51 tons per year. During construction, routine operational activities, maintenance, and decommissioning, GHG emissions would be generated. A comparison of Alternative 5 GHG emissions (51.5 MtCO2e) to the existing power plant inventory for California (107,243,302 MtCO2e), not including construction) shows that emissions resulting from Alternative 5 would be are 0.00005 percent. A typical 30-MW fossil fuel fired power in California would produce 965,553 MtCO2e over its 30 year lifespan. Subtracting the alternative project GHG emissions (51.5 MtCO2e) from these avoided emissions also indicates that Alternative 5 would assist in the attainment of the state's goals of reducing GHG emissions to 1990 levels by 2020. This would result in a loss of 254 tons of carbon storage capacity.

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
4.2 Noise	No effects	No effects	Individual pieces of equipment would generate noise levels in a range from 74 to 89 dBA at 50 feet from the source (Table 4.2-1). Due to the location of the closest residence (located less than 0.1 mile from the site), these noise and vibration levels would not be attenuated over distance and reduced to background levels at the closest sensitive receptor (located less than 0.1 mile from the site). Because construction of Phase I would begin in the north and move to the south, disturbance from Phase I construction would result in a short-term, adverse effect on the residence. During construction, the Phase I equipment would include a total of 10 transformers (one for every two megawatts of power generation) to be enclosed within each photovoltaic power block. However, the closest transformer to the closest receptor is over 500 feet away. Even with the composite noise of 10 transformers in Phase I, the sound level at the closest receptor would not exceed 55 dB. While this would result in a long-term increase in ambient noise levels, it would not be audible to the nearest receptor.	Effects under this alternative would be slightly reduced. Since Alternative 3 is the same size and the same amounts and types of disturbance would occur, the same amount of noise would be generated, however, since the project would be moved 50 feet further away from the closest sensitive receptor and have a vegetative screen installed, noise effects would be attenuated slightly.	Effects under this alternative would be short-term, adverse construction noise, ground-borne vibration, and traffic noise similar to the effects under Alternative 3. However, since the construction periods for these phases are shorter under this alternative, effects would be for a shorter time period.

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
4.3 Geology, Topography, & Geologic Hazards	No effects	No effects	The Proposed Action would not increase the geologic instability of the area and would not increase the risk of on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. There would be no effect on a unique geologic feature. Flash flood events could result in on-site damage that could represent a hazard. It is possible that a major flash flood could result in damage down gradient of the site. Compliance with earthquake building codes and maintaining the natural drainage would minimize potential risk associated with the most likely geologic hazards; however, once these events occur, they can strain or stress the existing infrastructure.	Effects under this alternative would be the same as those identified under Alternative 3 since the project is the same size and the same amounts and types of disturbance would occur.	Effects under this alternative would be the similar as those identified under Alternative 3. The difference in the area graded (10 acres) and developed (238 acres) would be reduced, but the type, intensity, and duration of the effects would be similar.
4.4 Soils	No effects	No effects	Both topsoil and vegetation would be removed and vegetation would not be allowed to re-grow over an approximate 12.5 acre area. Therefore, there would a strong potential for wind and water erosion over this 12.5 acres. Another 420 acres would be grubbed or scarified for solar panel installation. The Proposed Action would increase the erodibility of the soils through grubbing and scarifying to remove vegetation across 420 acres of the Proposed Action Area	Effects under this alternative would be the same as those identified under Alternative 3 since the project is the same size and the same amounts and types of disturbance would occur.	Effects would be the similar, but less than those identified for Alternative 3. Only 10 acres would be graded as opposed to 12.5 acres; therefore, fewer acres of topsoil would be removed. Since the alternative would decrease the number of structures, specifically concrete pads and post, and the area over which erosion would occur and topsoil removed would be less than Alternative 3, then the effects from this alternative would be similar but less than those for Alternative 3.

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			Due to the lack of protected soils at the site, development of the Proposed Action would not affect soils identified for special protection.		
4.5 Water Resources	No effects	No effects	The Applicant is conducting flooding models using the Hydrologic Engineering Centers River Analysis System [HEC-RAS] of the USACE; however, the data were not available at the time of publication of this document. Previous modeling by the Applicant has indicated the major drainage channels could experience high flows during episodic rain events. The available information suggests that flooding is possible in the Proposed Action area, but the intensity and frequency of these events is not known. Therefore, it is not possible at this time to estimate what the potential flood risk is at the site and the possible effects. The flow pattern alteration would not alter the overall flow pattern for the area. Groundwater quality would not be altered by the Proposed Action. The Proposed Action would degrade the quality of surface waters by increasing erosion, increasing sedimentation, or introducing	Effects under this alternative would be the same as those identified under Alternative 3 since the project is the same size and the same amounts and types of disturbance would occur and the same amount of water would be used.	Effects would be similar to those identified for Alternative 3. However, because only 238 acres would be developed and solar arrays would be located on approximately 228 acres, this alternative would slightly reduce the area graded to approximately 10 acres and decrease the area where infiltration would not occur. The reduced footprint would also reduce the area where potential drainage alteration could occur. This alternative would also require less water for panel washing than Alternative 3

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			contaminated waters. The water obtained for both construction and operations would be from a permitted off-site source; therefore, it would not decrease the water supply in the Proposed Action area.		
4.6 Biological Resources	No effect	No effect	Direct effects on yucca plants during construction would be short-term. Grading and grubbing activities would cause the direct loss of approximately 420 acres of creosote bush-white bursage, white bursage, desert wash, and/or already disturbed vegetative communities. The long-term effects on vegetation would depend on the scale, intensity, and duration of the activity. Grading and grubbing activities could create opportunities for non-native invasive weed species to colonize in areas where they had not previously occurred. Construction could directly affect wildlife by loss and fragmentation of cover, breeding, and foraging habitat. These activities and vehicle use could cause direct mortality to wildlife. Human activity would likely cause most wildlife species to avoid the Proposed Action area until the	Effects would be similar to those described for Alternative 3. Alternative 4 would involve the same initial effect on native communities; however, the corridor along Santa Fe Fire Road would provide an opportunity for some native vegetation to be salvaged from the construction site and transplanted. Similarly, Alternative 4 would involve the same initial effect on native plant species except Joshua trees could be replanted along the corridor. Invasive species could likely be increased, as with Alternative 3, due to mechanically disturbed soil and habitat. Alternative 4 would have	Under Alternative 5, construction and operations and maintenance activities would cause similar direct and indirect effects as described under Alternative 3. However, this alternative would reduce the area of disturbance and, therefore, reduce the amount of vegetation that would be removed compared to Alternative 3. Only 238 acres would be developed with solar arrays. This alternative would reduce the loss of wildlife habitat. Only 238 acres would be developed with solar arrays. This alternative would reduce the potential effects on special status species compared to Alternative 3.

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			disturbance conditions have concluded. Transmission poles could also pose a direct collision hazard to birds. Human activities could potentially provide food or other attractants which could draw unnaturally high numbers of opportunistic predators and scavengers. Loss of burrows due to construction could also cause wildlife to search for or dig new burrows. Infrastructure development could alter wildlife movement in the area and just outside the boundary of the Proposed Action. Fences and transmission poles could also cause increased predation wildlife because raptors could use the infrastructure for perches. Loss of vegetation could indirectly reduce available forage and shelter, degrading and fragmenting existing higher quality habitat. The introduction of an artificial water source into the project area may provide suitable habitat for the Argentine ant, an invasive species in California. Clearing and grading activities would directly remove special status plants from the area. Construction activities, ongoing maintenance, including vegetation clearing, and the frequent	effects similar to those described for Alternative 3. Although Alternative 4 would provide increased habitat for wildlife, water and foraging opportunities could draw wildlife into an area of greater traffic and risk for mortality. Alternative 4 would have similar effects on special status species as those described for Alternative 3. Although Alternative 4 could provide increased habitat for wildlife, water and foraging opportunities could draw wildlife into an area of greater traffic and risk for mortality. This would be particularly relevant for desert tortoise, nesting and foraging birds, and foraging raptors.	

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			use of vehicles on-site could introduce invasive weeds to the site. Le Conte's thrasher, northern harrier, and prairie falcon have been observed on the site and may be adversely affected by the Proposed Action. If owls are present on the site during construction, they may not be able to move quickly enough to avoid mortality due to collisions with vehicles and equipment. Vehicle use on the site during operation and maintenance could also increase collisions and mortality of the burrowing owl. Desert tortoise are present on-site and could be adversely affected by the Proposed Action. Effects would be both short- and long-term. The Proposed Action could result in direct or indirect effects on birds protected by the Migratory Bird Treaty Act, including northern harrier, prairie falcon, golden eagle, red-tailed hawk, and any other migratory bird species.		
4.7 Cultural Resources	No effects	No effects	No cultural resources eligible for inclusion in the NRHP are known to occur in the Proposed Action area.	Effects under this alternative would be the same as those identified under Alternative 3.	Effects on cultural resources resulting from this alternative would be similar to those identified under Alternative 3.
4.8 Paleontological Resources	No effects	No effects	The Proposed Action has a low potential to affect significant nonrenewable fossil resources.	Effects under this alternative would be the same as those identified under Alternative 3.	Effects on paleontological resources resulting from this alternative would be similar to those identified under Alternative 3.

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
4.9 Land Use and Realty	No effects	No effects	The Proposed Action would, have no adverse effect on the BLM's ability to site future utilities within the corridor and would not conflict with either the Energy Production and Utility Corridor Element or the MUC M designation of the CDCA Plan.	Effects under this alternative would be the same as those identified under Alternative 3.	Effects under this alternative would be the same as those identified under Alternative 3.
4.10 Special Management Areas	No effects	No effects	No effect on Special Management Areas (SMAs) as a result of the Proposed Action. State Route 247 is a County-designated Scenic Route. Drivers along State Route 247 would have short-term views of the Proposed Action site during construction, operations and maintenance, and reclamation. Impacts on sensitive viewers are evaluated in more detail in Section 4.6.	Effects under this alternative would be the same as those identified under Alternative 3.	Effects under this alternative would be the same as those associated with the Proposed Action (Alternative 3).
4.11 Recreation	No effects	No effects	Construction of the Proposed Action would affect off-site recreational uses through short term disruption of access from fugitive dust from clearing and grading and long term alteration of the views as seen from recreation areas; however, visual effects are discussed in greater detail in Section 4.12. The temporary closure of portions of Santa Fe Fire Road during grading and hardening would result in short-term effects on access but long-term beneficial effects on the quality of the road.	Effects under this alternative would be the same as those identified under Alternative 3.	The effects on recreation would be the same under this alternative from construction, operations and maintenance, and decommissioning as those identified in Alternative 3.

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
4.12 Visual Resources	No effects	No effects	During the construction period, construction activities and materials, equipment, trucks, and parked vehicles all could be visible on the proposed project site and thus temporarily change the existing visual environment. Construction activities would be conducted in a manner that would minimize (visible) dust emissions. Therefore, visual changes associated with construction period activities at the proposed project site would be short-term. The proposed project would result in increased levels of visual contrast by introducing new permanent above-ground structures into the landscape. However, these changes would not directly conflict with the management objectives associated with the interim VRM class established for the proposed project site. In summary, visual changes associated with operations and maintenance would be long-term.	Under this alternative, recreationists traveling the Santa Fe Fire Road en route to Blackhawk Canyon would see shielded views of the proposed project which would reduce the visual effect of the Proposed Action. All other viewpoints would have the same views as Alternative 3 and the effects on visual resources would be the same during Phases I and II.	Visual effects during construction of Phase I and II would be similar to effects under Alternative 3. However, since the construction periods for these phases are shorter under this alternative, effects would be for a shorter time period. Since a smaller amount of area is being developed and the amount of energy being produced is less, the facility itself would be smaller and be less of a contrast to the surrounding area. Visual changes associated with operations and maintenance would be long-term, however, they would be less than that experienced under Alternative 3.
4.13 Transportation	No effects	No effects	Construction of both phases of the project would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force (assuming they all drive separately) and an additional unquantified short-term increase in traffic volume. Up to a maximum of 90 additional trips per	Effects under this alternative would be the same as those identified under Alternative 3.	Implementation of this alternative would result in similar effects on traffic volume as Alternative 3. The number of trips from workers and construction equipment as well as the delivery of supplies at the peak of construction would be the same as under Alternative 3; however, the effect would be for a shorter period since the construction phases under this

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			day would not change the LOS of SR 247, nor would it affect the LOS of I 15, SR 18, or Bear Valley Road. During Phase II the labor force would mirror the labor force discussed for Phase I.		alternative are shorter than the construction phases under Alternative 3. The effects on Foothill Road, Santa Fe Fire Road, and Zircon Road would be the same. There would be short-term traffic disruptions due to oversize loads. However, since this alternative is smaller than Alternative 3, this disruption would be for a shorter period of time.
4.14 Human Health and Safety/Hazardous Materials	No effects	No effects	It is unlikely that a hazard to the public or environment would occur as a result of soil disturbance at the site during construction of the Proposed Action. Disturbance of groundwater is also not expected to occur during site construction because foundations would not be drilled to these depths. Leaks would likely be contained within the walls of the substation and the transformers would have biodegradable oil. The solar facility may increase the potential for additional incidents related to fire and fire safety.	The effects and related mitigation measures would be the same for this alternative as those for Alternative 3.	Because the footprint is smaller and the construction period shorter for this alternative, the likelihood of potential small spills would be reduced proportionately; however, the types of effects and related mitigation measures would be the same for this alternative as those for Alternative 3.
4.15 Social and Economic Conditions	No effects	No effects	Assuming that $20 million of construction phase direct spending (related to wages and purchases of materials and equipment) occurs in San Bernardino County, the initial $20 million in direct local content expenditures would generate a grand total of $36.1 million in total output to the region. In addition the cumulative	Effects during Phases I and II under this alternative would be similar to Alternative 3.	Effects during Phases I and II under this alternative would be similar to Alternative 3

Table ES-1 Comparison Summary of Effects of Alternatives

Resource Area	Alternative 1 (No Action)	Alternative 2 (Land Use Plan Amendment)	Alternative 3 (CES Proposed Action)	Alternative 4 (Modified Site Layout)	Alternative 5 Smaller Project Alternative
			lifetime annual fee for BLM rents will be $5.6 million. Indirect effects include the effects occurring along the supporting supply chain as goods and services are purchased from vendors and subcontractors supporting the installation. Induced effects represent the cumulative effects from household spending, reflecting labor earnings from direct and indirect related economic activity. On average, 25 construction and supervisory personnel would be required on-site for approximately eight months to build Phase I, with 45 personnel being required at peak times. During Phase II, this manpower loading would be repeated.		
4.16 Environmental Justice	No effects	No effects	The Proposed Action is not expected to have a disproportionately high and adverse human health or environmental effect on minority and low-income populations in the Lucerne Valley.	Effects under this alternative would be similar to Alternative 3.	Effects under this alternative would be similar to Alternative 3
4.17 Energy and Minerals	No effects	No effects	No effect on mineral or energy resources would occur. The Proposed Action would require energy and mineral resources for construction, operations and maintenance, and decommissioning. However, given the expected 30-year lifespan of this renewable energy project, this would not be an adverse effect.	Effects under this alternative would be similar to Alternative 3	Effects under this alternative would be similar to Alternative 3.